

ABSTRACT OF THE DISCLOSURE

The dynamic range and the noise immunity of a digital imaging system are increased by basing an estimate of the illumination on a sensor on a series of measurements of the accumulated illumination at intervals within an exposure period. The measuring may occur destructively, or alternatively the photocurrent of the sensor may continue to accumulate over the exposure period. The estimate may use statistical signal processing of the measurements, based on various noise models and various optimization criteria. The estimate may be computed recursively over the multiplicity of measurements, using a set of recursive values that may include but is not limited to the estimated illumination, a current weighting coefficient, a variance of the current measurement and a variance over the series of measurements.

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